percent earned less than $5.61 and the highest 10 percent earned more than $11.27. Median hourly earnings in the industries employing the largest numbers of teacher assistants in 1997 were as follows:

Elementary and secondary schools	$7.30
Colleges and universities	7.10
Individual and family services	7.10
Child day care services	6.50
Local government, except education and hospitals	6.00

About 3 out of 10 teacher aides belonged to unions in 1998—mainly the American Federation of Teachers and the National Education Association—which bargain with school systems over wages, hours, and the terms and conditions of employment.

Related Occupations
Teacher assistants who instruct children have duties similar to those of preschool, elementary, and secondary school teachers and school librarians. However, teacher assistants do not have the same level of responsibility or training. The support activities of teacher assistants and their educational backgrounds are similar to those of child-care workers, family day care providers, library technicians, and library assistants.

Sources of Additional Information
For information on teacher assistants, including training and certification, contact:
☞ American Federation of Teachers, Paraprofessional and School Related Personnel Division, 555 New Jersey Ave. NW., Washington, DC 20001. Internet: **http://www.aft.org/psrp**
For information on a career as a teacher assistant, contact:
☞ National Resource Center for Paraprofessionals in Education and Related Services, 365 5th Ave., New York, NY 10016.
Internet: **http://web.gc.cuny.edu/dept/case/nrcp**
School superintendents and State departments of education can provide details about employment requirements.

Word Processors, Typists, and Data Entry Keyers

(O*NET 55307, 56017, and 56021)

Significant Points

- Workers can acquire their skills through high schools, community colleges, business schools, or self-teaching aids such as books or tapes.

- Overall employment is projected to decline due to the proliferation of personal computers and other technologies; however, the occupation's large size and high turnover should produce many job openings each year.

- Those with expertise in appropriate computer software applications should have the best job prospects.

Nature of the Work
Organizations need to process a rapidly growing amount of information. Word processors, typists, and data entry keyers help ensure this work is handled smoothly and efficiently. By typing texts, entering data into a computer, operating a variety of office machines, and performing other clerical duties, these workers help organizations keep up with the rapid changes of the "Information Age."

Word processors and typists usually set up and prepare reports, letters, mailing labels, and other text material. *Typists* make neat, typed copies of materials written by other clerical, professional, or managerial workers. They may begin as entry-level workers by typing headings on form letters, addressing envelopes, or preparing standard forms on typewriters or computers. As they gain experience, they are often assigned tasks requiring a higher degree of accuracy and independent judgment. Senior typists may work with highly technical material, plan and type complicated statistical tables, combine and rearrange materials from different sources, or prepare master copies.

Most keyboarding is now done on word processing equipment—usually a personal computer or part of a larger computer system—which normally includes a keyboard, video display terminal, and printer, and may have "add-on" capabilities such as optical character recognition readers. *Word processors* use this equipment to record, edit, store, and revise letters, memos, reports, statistical tables, forms, and other printed materials. Although it is becoming less common, some word processing workers are employed in centralized word processing teams that handle the transcription and typing for several departments.

In addition to the duties mentioned above, word processors and typists often perform other office tasks, such as answering telephones, filing, and operating copiers or other office machines. Job titles of these workers often vary to reflect these duties. Clerk typists, for example, combine typing with filing, sorting mail, answering telephones, and other general office work. Notereaders transcribe stenotyped notes of court proceedings into standard formats.

Data entry keyers usually input lists of items, numbers, or other data into computers or complete forms that appear on a computer screen. They may also manipulate existing data, edit current information, or proofread new entries to a database for accuracy. Some examples of data sources include customers' personal information, medical records, and membership lists. Usually this information is used internally by a company and may be reformatted before use by other departments or by customers.

Keyers use various types of equipment to enter data. Many keyers use a machine that converts the information they type to magnetic impulses on tapes or disks for entry into a computer system. Others prepare materials for printing or publication by using data entry composing machines. Some keyers operate on-line terminals or personal computers. Data entry keyers increasingly also work with non-keyboard forms of data entry such as scanners and electronically transmitted files. When using these new character recognition systems, data entry keyers often enter only those data which cannot be recognized by machines. In some offices, keyers also operate computer peripheral equipment such as printers and tape readers, act as tape librarians, and perform other clerical duties.
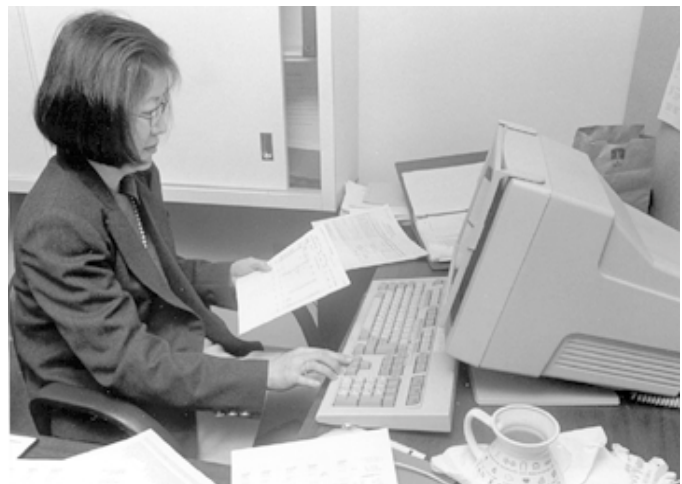
A job as a word processor, typist, or data entry keyer frequently serves as a steppingstone to higher paying jobs with increased responsibilities.

Working Conditions

Word processors, typists, and data entry keyers usually work a standard 40-hour week in clean offices. They sit for long periods and sometimes must contend with high noise levels caused by various office machines. These workers are susceptible to repetitive strain injuries, such as carpal tunnel syndrome and neck, back, and eye strain. To help prevent these from occurring, many offices have scheduled exercise breaks, ergonomically designed keyboards, and workstations that allow workers to stand or sit as they wish.

Employment

Word processors, typists, and data entry keyers held about 894,000 in 1998 and were employed in every sector of the economy. Some workers telecommute by working from their homes on personal computers linked by telephone lines to those in the main office. This enables them to type material at home while still being able to produce printed copy in their offices.

About 3 out of 10 word processors, typists, and data entry keyers held jobs in firms providing business services, including temporary help, word processing, and computer and data processing. Nearly 2 out of 10 worked in Federal, State, and local government agencies.

Training, Other Qualifications, and Advancement

Employers generally hire high school graduates who meet their requirements for keyboarding speed. Increasingly, employers also expect applicants to have word processing or data entry training or experience. Spelling, punctuation, and grammar skills are important, as is familiarity with standard office equipment and procedures.

Students acquire skills in keyboarding and in the use of word processing, spreadsheet, and database management computer software packages through high schools, community colleges, business schools, temporary help agencies, or self-teaching aids such as books or tapes.

For many people, a job as a word processor, typist, or data entry keyer is their first job after graduating from high school or after a period of full-time family responsibilities. This work frequently serves as a steppingstone to higher paying jobs with increased responsibilities. Large companies and government agencies usually have training programs to help clerical employees upgrade their skills and advance to other positions. It is common for word processors, typists, and data entry keyers to transfer to other clerical jobs, such as secretary or statistical clerk, or to be promoted to a supervisory job in a word processing or data entry center.

Job Outlook

Despite the projected decline in employment of word processors and typists and relatively slow growth of data entry keyers, the need to replace those who transfer to other occupations or leave this large occupation for other reasons will produce numerous job openings each year. Job prospects will be most favorable for those with the best technical skills—in particular, expertise in appropriate computer software applications. Word processors, typists, and data entry keyers must be willing to continuously upgrade their skills with new technologies.

In spite of rapid increases in the volume of information and business transactions, overall employment of word processors, typists, and data entry keyers is projected to decline through 2008. Although word processors, typists, and data entry keyers are all affected by productivity gains stemming from organizational restructuring and the implementation of new technologies, projected growth differs among these workers. Employment of word processors and typists is expected to decline due to the proliferation of personal computers which allow other workers to perform duties formerly assigned to word processors and typists. Most professionals and managers, for example, now use desktop personal computers to do their own word processing. Because technologies affecting data entry keyers tend to be costlier to implement, however, these workers will be less affected by technology and should experience slower than average growth.

Employment growth of data entry keyers still will be dampened by productivity gains, as various data capturing technologies, such as bar code scanners, voice recognition technologies and sophisticated character recognition readers, become more prevalent. These technologies can be applied to a variety of business transactions, such as inventory tracking, invoicing, and order placement. Moreover, as telecommunications technology improves, many organizations will increasingly take advantage of computer networks that allow data to be transmitted electronically, thereby avoiding the reentry of data. These technologies will allow more data to be entered automatically into computers, reducing the demand for data entry keyers.

In addition to technology, employment of word processors, typists, and data entry keyers will be adversely affected by domestic and international outsourcing. Many organizations have reduced or even eliminated permanent in-house staff, for example, in favor of temporary help and staffing services firms. Some large data entry and processing firms increasingly employ workers in nations with low wages to enter data. As international trade barriers continue to fall and telecommunications technology improves, this transfer will mean reduced demand for data entry keyers in the United States.

Earnings

Median annual earnings of word processors and typists in 1998 were $22,590. The middle 50 percent earned between $18,490 and $27,320. The lowest 10 percent earned less than $14,480, while the highest 10 percent earned more than $32,550. The salaries of these workers vary by industry and by region. In 1997, median annual earnings in the industries employing the largest numbers of word processors and typists were:

Elementary and secondary schools	$23,200
State government, except education and hospitals	22,500
Local government, except education and hospitals	22,400
Offices and clinics of medical doctors	21,800
Personnel supply services	20,200

Median annual earnings of data entry keyers in 1998 were $19,190. The middle 50 percent earned between $15,810 and $22,910. The lowest 10 percent earned less than $13,660, and the highest 10 percent earned more than $27,840. In 1997, median annual earnings in the industries employing the largest numbers of data entry keyers were:

State government, except education and hospitals	$21,300
Accounting, auditing, and bookkeeping	19,600
Computer and data processing services	17,500
Commercial banks	17,400
Personnel supply services	16,900

In the Federal Government, clerk-typists and data entry keyers without work experience started at about $16,400 a year in 1999. Beginning salaries were slightly higher in selected areas where the prevailing local pay level was higher. The average annual salary for all clerk-typists in the Federal Government was about $22,900 in 1999.

Related Occupations

Word processors, typists, and data entry keyers must transcribe information quickly. Other workers who deliver information in a timely manner are stenographers, dispatchers, and telephone operators. Word processors, typists, and data entry keyers also must be comfortable working with office automation, and in this regard they are similar to court reporters, medical transcriptionists, secretaries, and computer and peripheral equipment operators.

Sources of Additional Information

For information about job opportunities for word processors, typists, and data entry keyers, contact the nearest office of the State employment service.